Claims

1. A light detecting apparatus in which a distal end of an optical fiber probe faces a surface for measurement, a spot of light from said optical fiber probe is formed on said surface for measurement, and light from said surface for measurement is detected by said optical fiber probe, wherein

the apparatus has a broad range measurement mode exploiting the light propagated through a core of said optical fiber probe and a high resolution measurement mode exploiting near-field light seeping from said core of said optical fiber probe.

2. The light detecting apparatus according to claim 1 wherein switching is made between said broad range measurement mode and said high resolution measurement mode based on a distance between the distal end of said optical fiber probe and said surface for measurement.

3. The light detecting apparatus according to claim 2 wherein switching is made to said broad range measurement mode when said distance exceeds a preset value and wherein switching is made to said high resolution measurement mode when said distance is not larger than said preset value.

4. The light detecting apparatus according to claim 2 wherein switching is made between said broad range measurement mode and said high resolution measurement mode based on said distance correlated to the value of the diameter of a light radiating aperture formed centrally of the distal end of a core of said optical

fiber probe.

5. The light detecting apparatus according to claim 2 further comprising distance changing means for changing the distance between said optical fiber probe and said surface for measurement in effecting the switching between said broad range measurement mode and said high resolution measurement mode.

6. The light detecting apparatus according to claim 2 wherein said light radiating aperture is formed centrally of the distal end of said core.

7. The light detecting apparatus according to claim 1 wherein a light shielding coating layer is formed at the distal end of said core.

8. The light detecting apparatus according to claim 1 wherein switching is made to said high resolution measurement mode after detecting the light from said surface for measurement by said broad range measurement mode.

9. The light detecting apparatus according to claim 1 further comprising a light source for radiating said propagated light and wavelength controlling means for controlling the wavelength of light radiated from said light source.

10. The light detecting apparatus according to claim 9 wherein said wavelength controlling means switches the wavelength of light radiated from said light source between said broad range measurement mode and said high resolution measurement mode.

11. The light detecting apparatus according to claim 9 wherein said optical fiber probe has a light shielding coating layer in such a manner that a light radiating

aperture is formed centrally of the distal end of said core, and wherein said wavelength controlling means controls the wavelength of light radiated from said light source to a wavelength determined based on the material of said light shielding coating layer.

12. The light detecting apparatus according to claim 9 further comprising light monitor means for monitoring the propagated light radiated from said light source.

13. A light detecting method in which a distal end of an optical fiber probe faces a surface for measurement, a spot of light from said optical fiber probe is formed on said surface for measurement, and light from said surface for measurement is detected by said optical fiber probe, wherein

the method has a broad range measurement mode exploiting the light propagated through a core of said optical fiber probe and a high resolution measurement mode exploiting near-field light seeping from said core of said optical fiber probe.

14. The light detecting method according to claim 13 wherein switching is made between said broad range measurement mode and said high resolution measurement mode based on a distance between the distal end of said optical fiber probe and said surface for measurement.

15. The light detecting method according to claim 14 wherein switching is made to said broad range measurement mode when said distance exceeds a preset value and wherein switching is made to said high resolution measurement mode when

said distance is not larger than said preset value.

16. The light detecting method according to claim 14 wherein switching is made between said broad range measurement mode and said high resolution measurement mode based on said distance correlated to the value of the diameter of a light radiating aperture formed centrally of the distal end of a core of said optical fiber probe.

17. The light detecting method according to claim 14 further comprising a distance changing step of changing the distance between said optical fiber probe and said surface for measurement in effecting the switching between said broad range measurement mode and said high resolution measurement mode.

18. The light detecting method according to claim 13 wherein the light from said surface for measurement is detected by an optical fiber probe in which a light radiating aperture is formed centrally of the distal end of said core.

19. The light detecting method according to claim 13 wherein the light from said surface for measurement is detected by an optical fiber probe in which a light shielding coating layer is formed at the distal end of said core.

20. The light detecting method according to claim 13 wherein switching is made to said high resolution measurement mode after detecting the light from said surface for measurement by said broad range measurement mode.

21. The light detecting method according to claim 13 further comprising a light radiating step of radiating said propagated light and a wavelength controlling step

of controlling the wavelength of light radiated from said light radiating step.

22. The light detecting method according to claim 21 wherein said wavelength controlling step switches the wavelength of light radiated in said light radiating step between said broad range measurement mode and said high resolution measurement mode.

23. The light detecting method according to claim 21 wherein the light from the surface for measurement is measured by said optical fiber probe having a light shielding coating layer formed for forming a light radiating aperture, and wherein, in said wavelength controlling step, the wavelength of light radiated in said light radiating step is controlled to a wavelength determined based on the material of said light shielding coating layer.

24. The light detecting method according to claim 13 further comprising a light radiating step of radiating said propagated light and a light monitor step of monitoring the propagated light radiated in said light radiating step.